HAER No. OR-92

Southern Pacific Railroad Natron Cutoff, Tunnel 3
(Summit Tunnel)
Milepost 537.77
Odell Lake Vicinity
Klamath ~~and Lane Counties~~ County
Oregon

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
San Francisco, California

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HISTORIC AMERICAN ENGINEERING RECORD

SOUTHERN PACIFIC RAILROAD NATRON CUTOFF, TUNNEL 3

HAER No. OR-92

Location:	Tunnel 3 crosses beneath the county line, with its west portal in Klamath Counth and its east portal in Lane County. Southern Pacific Cascade Route Tunnels Milepost 537.77, Odell Lake vicinity, Klamath and Lane Counties, Oregon UTM: 10-576630-4826470 Quad: Willamette Pass, Oreg. 7.5', Provisional Editon 1986 (west portal) UTM: 10-576300-4827540 Quad: Willamette Pass, Oreg., 7.5', Provisional Editon 1985 (east portal)
Date of Construction:	1925.
Engineer:	Southern Pacific Railroad Engineering Department.
Present Owner:	Union Pacific Railroad, 1416 Dodge Street, Omaha NE.
Present Use:	Railroad Tunnel.

Significance:

The Southern Pacific Railroad Cascade Route, built as the Natron Cutoff between Black Butte, California and Natron, Oregon was one of a series of major rebuildings and realignments of the original Central Pacific Railroad. Begun in 1905 under railroad magnate E.H. Harriman to replace the original Central Pacific route over the Siskiyou Mountains into Oregon, the Natron Cutoff had to overcome both natural and political obstacles. Stalled by government anti-trust lawsuits against Harriman, by World War I and the ensuing federal takeover of the nation's railroads, the Natron Cutoff finally overcame the rugged Cascade Mountains of Oregon to reach completion in 1927, at an ultimate cost of nearly $40 million. For the purpose of the current project, the Natron Cutoff was found likely to be eligible for the National Register of Historic Places at the state level of significance under Criterion A for its significance in engineering, transportation history, and the economic history of central Oregon, and in the development of the West, and under criterion B for its association with E.H. Harriman. The Natron Cutoff's period of significance is 1905 to 1945, from the beginning of construction in 1905, through the years of its role in the economic development of the central Oregon, to the conclusion of the railroad's achievements in World War II. Built in 1925, Tunnel 3 is a contributive element of this property.

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I. DESCRIPTION

Tunnel 3 is a 3,655-foot, single track concrete-lined railroad tunnel, with concrete portal faces and wingwalls. The tunnel is on a five degree left curve alignment, and carries the tracks of the Union Pacific Railroad's (formerly Southern Pacific) Cascade Route line over the summit of the Cascade Mountains beneath Pengra Pass near Odell Lake. The west portal of the tunnel is at elevation 5,050 feet in Klamath County, Oregon while the east portal lies in Lane County at an elevation of 4,800 feet.

II. HISTORICAL INFORMATION

Contractors, Henry & McFee built Tunnel 3 (originally numbered Tunnel 19) in 1925 as one of the final elements of the Natron Cutoff between Black Butte, California and Natron, Oregon. Southern Pacific began the project in 1905, only to have it stalled in 1911 by federal anti-trust litigation that had begun a few years before. [For a full history of this line and of this undertaking, see the documentation set for the Southern Pacific Railroad Natron Cutoff (Southern Pacific Natron Extension) (Southern Pacific Cascade Route), Southern Pacific Cascade Route Tunnels, HAER No..] After successfully fending off the federal suit that would have caused it to divest itself of all former Central Pacific properties including the Natron Cutoff, and after resuming control of its properties following the nationalization of railroads during World War I, Southern Pacific resumed construction on the remaining 110-mile gap in 1923.

Southern Pacific let the grading contracts between September 1, 1923 and April 9, 1924, distributing the work among six firms: John Hampshire would be responsible for 36 miles; Utah Construction Company of Ogden for 36.7 miles; Stewart & Welch of San Francisco and Seattle for 14.6 miles, including the Summit Tunnel; Ericson Peterson & Grier Company for 9.7 miles; Henry & McFee for 5.3 miles, the aggregate length of the tunnels and approaches; and Kelly & Sullivan for 5.4 miles. The difficulties facing tunnel-builders Henry & McFee were typical of those on the north end of the project.

The forty-three miles from Oakridge to the Summit comprised mountainous, heavy timber country, requiring almost continuous side-hill grading and extensive tunneling. Descending from the Summit Tunnel the line would follow the south side of Salt Creek Canyon for nineteen miles until reaching the crest of Cougar Ridge, where it would make a 200° turn--much of which would be inside a 2,205-foot tunnel. Backtracking along the same ridge but at a lower elevation for eight miles the line would then make another sharp curve, crossing Salt Creek on a seventy foot-high, 515 foot-long steel viaduct to resume its progress north toward Oakridge. The sidehill construction was to prove difficult. As the graders pushed forward, unstable slopes forced line revisions and required the substitution of one 2,095-foot tunnel in place of three shorter tunnels originally planned at that location. Too, the absence of roads in the area meant that the contractors would have to build their own on which to bring up equipment.

In late October 1924 John G. McFee reported that his firm would be watching the mountain weather closely. Thirty more days of good weather would give the contractors a head start on their tunnel work and would enable them to continue work throughout the

coming winter. Their work was no small task: well up into the mountains on the north side of the summit, they faced drilling seventeen tunnels in a stretch of sixteen miles. What McFee needed was enough good weather to allow the grading crews of Kelly and Sullivan to complete *their* work so that the tunnelers could bring up their equipment and supplies. This work had proceeded somewhat more slowly that anticipated due to dry weather and fire danger: much of the brush had to be cleared by burning, and this had to be restricted to protect the timber. McFee anticipated employing nine hundred men on tunnel work and another three hundred on outside work. He very much wanted to have his crews underground before bad weather set in, which would allow them to be far ahead of estimates by Spring 1925. The longest tunnel facing McFee's forces would be the 3,655-foot Summit Tunnel, with another at 2,400 feet and yet another at 2,100 feet, and the remainder ranging down to a few hundred feet each. Geologic conditions offered both hindrances and help: the rock to be tunneled was extremely hard, but this would also reduce the need for timbering the bores. McFee had six steam shovels at work already, and his crews had spent the summer building wagon roads and camps in preparation for the tunnel work. McFee expected to absorb 500-600 men employed by Kelly and Sullivan in clearing the right-of-way to carry out grading work.

By early December 1924 McFee's crews were experiencing severe weather in the Cascades, but were still rushing their work and expected to continue throughout the winter as McFee had said. By this time approximately 44 miles of railroad had been completed between Kirk and Oakridge, thirty-seven miles of which were from Kirk to Skookum, and the remaining seven miles from Oakridge to the end of the rail construction. Trains were operating on both sections of road as far as the rails had been laid. A sixty-five mile gap remained, though grading work was nearly completed from Skookum to the Summit helper station, a distance of 31 miles, and schedules called for track laying and ballasting to start on this stretch in early Spring 1925. A workers' strike in late 1924 had not seriously hampered clearing the line. During the latter part of the summer and fall, the contractors had an average of 3,000 men employed in clearing right-of-way, grading, tunneling and track laying on the north end of the line. Because of excessive costs and difficulty of hauling, the contractors had established a number of small sawmills at convenient points in the forest adjacent to the groups of tunnels to provide construction timber for the tunnels.

Reports in mid-February 1925 indicated that, with three hundred men at work on the Summit Tunnel, the railroad contemplated its completion by Independence Day. Working from both ends, workers had already pushed in seven hundred feet from the south end and three hundred feet from the north end. On schedule, Henry & McFee holed through and completed this critical link in the Natron Cutoff.

III. SOURCES

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IV. PROJECT INFORMATION

As a result of the 1996 merger of the Union Pacific and Southern Pacific Railroads, a federal undertaking under the jurisdiction of the Surface Transportation Board of the U.S. Department of Transportation, and in order to accommodate freight trains utilizing longer and taller cars and loads--tri-level auto rack cars and cars carrying double-stacked containers--the Union Pacific will need to increase tunnel clearances on the former Southern Pacific Natron Cutoff. The tunnels, built between 1905 and 1927, are contributing elements of the National Register-eligible Southern Pacific Cascade Route Tunnels Historic District. The railroad has laser-measured all tunnels and will determine clearance needs on a tunnel-by-tunnel basis. Some, because of curved alignment, will require interior work to allow for longer cars such as tri-level auto rack cars; others will require both interior and portal work to provide sufficient vertical clearance for "double-stack" container cars. The latter work may impact the character-defining tunnel portals if crown mining of the tunnels (as opposed to lowering the tunnel floors) is selected. Inasmuch as this would cause an adverse effect to the tunnels, Union Pacific, in consultation with the Oregon SHPO, has elected to record the tunnels for the Historic American Engineering Record. A field review with Oregon SHPO staff resulted in guidance to document representative tunnels from the early and late construction periods. Documentation was carried out by P.S. Preservation Services, John Snyder Field Director and Historian, and Ed Andersen, Photographer. Photos were made in November 1997, and research was carried in June 1997, and from Novemher 1997 through April 1998.